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# Design Specification Document (DSD); Suspicious Order Monitoring System

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## Orderinsite" Design Specification

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#### **INTRODUCTION**

#### 1.1 PURPOSE

The purpose of this document is to present software design decisions for OrderInsite's Suspicious Order Monitoring (SOM) module. This document is intended for both the stakeholders and the developers of the system.

#### 1.5 DEPENDENCIES

The SOM module is dependent on OrderInsite's OI Replenish, OI Buy, OI Document, and Power BI Tool modules.



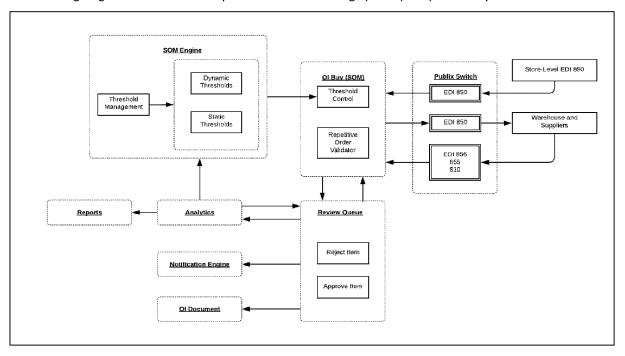
#### SYSTEM OVERVIEW

#### 2.1 SYSTEM FLOW

OrderInsite's Suspicious Order Monitoring System (SOM) software evaluates and if necessary, modifies, Store-Level EDI 850 Purchase Orders. Items in purchase orders are compared to pre-configured thresholds before submission to suppliers fulfilling the orders. The software module also includes case management through OrderInsite's OI Document module and post-order analysis through OrderInsite's Power BI module.

#### 2.1.1 System Flow Diagram

The following diagram illustrates the Suspicious Order Monitoring System (SOM) software process flow.



#### 2.1.2 Summary of Process Descriptions

#### # Process Description

#### 1. SOM Engine:

The SOM Engine uses order history, prescription history, and current balance onhand to calculate dynamic threshold values and daily, weekly, and monthly static threshold values.

Threshold Management allows a user to display and modify threshold values. Threshold values may need to be modified because;

- a) newly calculated threshold values fall outside the configurable tolerance setting and require manual user review before being applied; and
- the Analytics function identified a suspicious prescriber and a user decides to remove historical and future prescriptions written by prescriber to systematically adjust down the threshold values.

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<u>#</u>	<u>Process</u>	Process Description
2.	OI Buy (SOM):	OI Buy accepts store initiated 850 Purchase Orders routed from the Publix Switch and evaluates each item in the order to determine whether it needs to be validated under the Suspicious Order Monitoring program.
		For each qualified item in an 850 Purchase Order, the Threshold Control compares the order quantity to the static and dynamic thresholds. Any order quantity that exceeds a threshold limit is changed to zero and then the modified/validated 850 Purchase Order is returned to the Publix switch.
		Any item those order quantity was changed to zero is flagged as an order of interest and requires review by a user who decides the course of action. Orders of interest are displayed via Review Queue.
3.	Review Queue:	The Review Queue displays items flagged as Orders of Interest so that a course of action regarding the item can be determined by a user (e.g. it contains a repository of unworked orders of interest). A user with the appropriate permissions can;
		<ul><li>a) approve the item with the originally specified quantity;</li><li>b) approve the item with an adjusted quantity; or</li><li>c) deny the item.</li></ul>
		If an item is approved, a new 850 Purchase Order is created with the original or modified quantity and is routed to the Publix Switch via OI Buy.
		If an item is denied, a case is created in OrderInsite's case management application "OI Document".
		Within the Review Queue process, the Repetitive Order Validator component determines whether an item in an order is a duplicate.
4.	Analytics:	OrderInsite's Business Intelligent module provides post purchase order fulfillment data analytics.
5.	Reports:	Standard OrderInsite reports will be displayed and can optionally be downloaded in a PDF or Comma Separated Values (CSV) file.
6.	Ol Document:	OrderInsite's OI Document application provides case management for denied orders of interest.
7.	Notification Engine:	The Notification Engine manages the sending of email alerts and/or notifications when new Work Queue tasks like the flagged Orders of Interest are created.
8.	Publix Switch:	The Publix Switch is used to route EDI transactions between stores and OrderInsite and between OrderInsite and suppliers.
9.	Store-Level EDI 850:	Publix stores initiate EDI 850 Purchase Orders in their Pharmacy Practice Management System.
10.	Warehouse and Suppliers:	Publix distributes products to store through their warehouse and other drug suppliers like AmerisourceBergen.

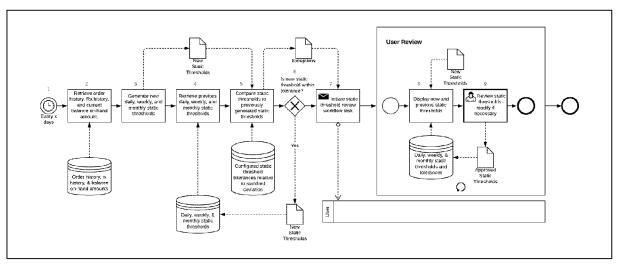
### **SOM ENGINE**

#### 3.1 STATIC THRESHOLDS

Daily, weekly, and monthly static threshold values are initially established then systematically recalculated on a configurable frequency schedule. Whether newly calculated threshold values are automatically applied or require manual user review before being applied, is determined by a configurable tolerance setting. OrderInsite's Work Queue is used to notify users of static threshold value changes that require manual user review.

#### 3.1.1 Automatic Static Threshold Value Maintenance Diagram

The following diagram describes the process of systematically generating static threshold values and either automatically updating new values or manually approving newly proposed values.



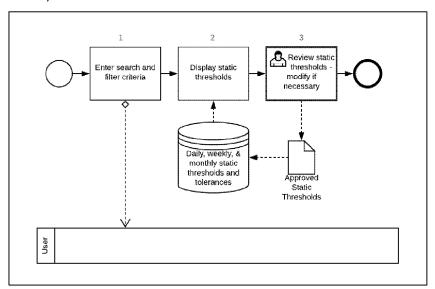
Step#	Description	
1.	On a configurable frequency, the system will initiate the Static Threshold maintenance process.	
2.	The system retrieves the purchase order history, prescription history and current balance on-hand quantities for every store and every schedule II through V NDC.	
3.	The system uses the historical information and the current balance on-hand quantities to generate new;	
	a) daily static threshold values;	
	b) weekly static threshold values using a 7-day rolling sum; and	
	c) monthly static threshold values using a 30-day rolling sum.	
4.	The system retrieves the previously generated daily, weekly, and monthly static threshold values.	
5.	The system compares the newly generated daily, weekly, and monthly static threshold values to the previously generated daily, weekly, and monthly static threshold values, respectively.	

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Step#	Description		
	Exceptions:		
	5.1	The new threshold values contain an NDC that does not exist in the previously calculated threshold values.	
	5.2	The new threshold values do not contain an NDC that existed in the previously calculated threshold values.	
	5.3	The new threshold values contain a store that does not exist in the previously calculated threshold values.	
	5.4	The new threshold values do not contain a store that existed in the previously calculated threshold values.	
6.	If the newly calculated daily, weekly, or monthly static threshold value is within the configured daily, weekly, or monthly standard deviation the system automatically updates the static threshold values.  If the newly calculated daily, weekly, or monthly static threshold value is <b>not</b> within the configured daily, weekly, or monthly standard deviation a workflow task is created. A user is required to review and if necessary, modify the static threshold value before accepting and approving the new value.		
	User Review:		
7.	A user with the appropriate role and permission rights selects a Static Threshold Review workflow task.		
8.	The new and previous daily, weekly, and monthly static threshold values are displayed.		
9.	The user reviews the static thresholds and modifies the values if necessary. Approving the values saves the changes.		

#### 3.1.2 Ad Hoc Static Threshold Value Maintenance Diagram

The following diagram describes the process of a user manually displaying and modifying the daily, week, and monthly static threshold values.



Step#	Description
1.	A user specifies search and filter criteria to isolate the static threshold records to be displayed.
2.	The system displays the static thresholds.
3.	The user reviews the static thresholds and modifies if necessary. Any changes are saved.

#### 3.2 DYNAMIC THRESHOLDS

The system shall detect orders that deviate substantially from a normal pattern, unusual size, and unusual frequency by comparing the order to the daily generate Dynamic Thresholds. The Dynamic Thresholds are based on the normal forecasted demand algorithms and includes any pre-configurated special events that may influence the results.

The normal forecasted demand is calculated by using a rolling 55-week period with a future 5-week demand prediction. The system chooses one of many mathematical algorithms that best fits the historical pattern and prediction of the future demand. Refer to the Appendix for additional information.

Additionally, the Dynamic Thresholds considers variances between actual balance on-hand and system calculated balance on-hand using prescription sales, manual adjustments, inter-store transfers, and purchases. This prevents a store from manually adjusting the balance on-hand to trigger orders.

#### 3.2.1 Manually Configured Special Events

Various events like new generic drug launches, natural disasters, store acquisitions, new store opening, and store closing can affect normal forecast demand. The Enterprise Adjustments module is used by corporate users to make minor adjustments to variables used by the forecast algorithms to accommodate larger than normal order quantities.



#### 3.2.2 Systematic Wholesaler Back-Order Special Event

Systematically, items that have been back-ordered over consecutive days will be identified so that systematically the Static Threshold values can be overridden to larger than normal single-day order quantities to be processed without triggering a suspected suspicious order alert. When previously back-ordered the items are received, the special back-order event is reset.

## SECTION 4 OI BUY (SOM COMPONENT)

OI Buy accepts store initiated 850 Purchase Orders routed from the Publix Switch and evaluates each item in the order to determine whether it needs to be validated under the Suspicious Order Monitoring program.

For each qualified item in an 850 Purchase Order, the Threshold Control compares the order quantity to the static and dynamic thresholds. Any order quantity that exceeds a threshold limit is changed to zero and then the modified/validated 850 Purchase Order is returned to the Publix switch.

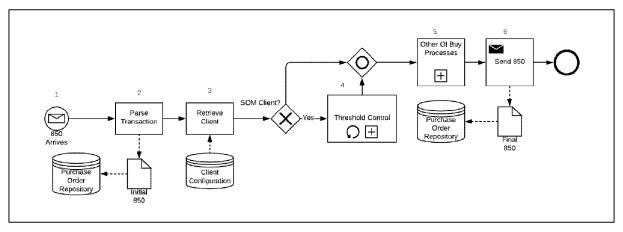
Any item those order quantity was changed to zero is flagged as an order of interest and requires review by a user who decides the course of action. Orders of interest are displayed via Review Queue.

The OI Buy application systematically creates new 850 Purchase Orders for user approved items in orders of interest. These transactions are submitted to the Publix switch.

The OI Buy application also accepts copies of 855's, 856's and 810's from all ordering sources, which includes, but is not limited to, 850, web -orders, 340B orders, and phones orders.

#### 4.1 OI Buy 850 Process

The following diagram describes the integration of the Repetitive Order Validator and Threshold Control in OI Buy EDI 850 Purchase Order process.



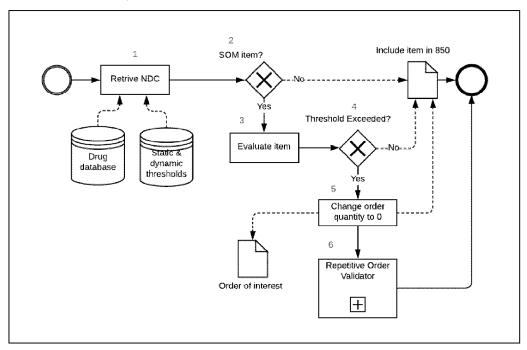
Step#	Description
1.	OrderInsite receives EDI 850 Purchase Orders.
2.	The system parses the transaction and stores the information in the Purchase Order Repository.
3.	If the client scribes to the SOM module, each item in the purchase order is processed by the SOM Threshold Control.  If the client does not scribe to SOM module, the SOM Threshold Control is not evaluated.
4.	Threshold Control evaluates each item in the Purchase Order to determine whether it is considered and item of interest. Refer to Threshold Control.
6.	Any other OI Buy process not part of the SOM application, are executed.

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Step#	Description
7.	The validated/ modified 850 Purchase Order is saved to the Purchase Order Repository and is submitted.

#### 4.2 THRESHOLD CONTROL PROCESS

Threshold Control determines whether an item in an order is an item of interest. The following diagram describes the Threshold Control process



Step#	Description
1.	The system retrieves the drug information and the configured static and dynamic threshold values.
2.	If an item in the purchase order is a drug that needs to be checked, it is evaluated, otherwise it is left in the purchase order unchanged.
3	The system evaluates the drug by comparing the order quantity to the static and dynamic thresholds.
4.	If the item in the purchase order has an order quantity that does not exceed the threshold limits the item is left in the purchase order without any changes.
5.	If the item in the purchase order has an order quantity that exceeds the threshold limits, the order quantity is changed to zero and is included in the purchase order (with a zero qty).
6.	The system executes the Repetitive Order Validator process to determine whether the order of interest is a duplicate order of interest already pending review.

#### 4.2.1 Process Scenario: Order Qty does not Exceed Static or Dynamic Threshold Limits

The following threshold control process scenario demonstrates an order quantity that does not exceed the static or dynamic threshold limits.

#### Step # Description

- SE\_01 In the early morning, the daily data extracts are received and processed. The system;
  - calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description Value

Daily Static Threshold: 100

Weekly Static Threshold: 300

Monthly Static Threshold: 1200

Dynamic Threshold: 100

Special Event: None

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	0
Monthly Accumulator:	0

- SE\_03 The store places an order for a quantity of 100 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 100	True
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(100 + 0) <= 300	True
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(100 +0) <= 1200	True
Is order quantity <= dynamic threshold limit?	100 <= 100	True
Is there a special event?		No

SE\_05 The order is not considered an order of interest.



#### 4.2.2 Process Scenario: Order Qty Exceeds Daily Static Threshold Limit

The following threshold control process scenario demonstrates an order quantity that exceeds the daily static threshold limit.

#### Step # Description

- SE\_01 In the early morning, the daily data extracts are received and processed. The system;
  - calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

The weekly and monthly accumulators for the drug are:

Threshold Description Value
Daily Static Threshold: 100
Weekly Static Threshold: 300
Monthly Static Threshold: 1200
Dynamic Threshold: 100
Special Event: None

Accumulator DescriptionValueWeekly Accumulator:0Monthly Accumulator:0

- SE\_03 The store places an order for a quantity of 200 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	200 <= 100	False
Is order quantity plus current weekly accumulator quantity <=	(200 + 0) <= 300	True
weekly static threshold limit?		
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(200 + 0) <= 1200	True
Is order quantity <= dynamic threshold limit?	100 <= 100	True
Is there a special event?		No

SE\_05 The order is flagged as an order or interest.

#### 4.2.3 Process Scenario: Order Qty Exceeds Weekly Static Threshold Limit

The following threshold control process scenario demonstrates an order quantity that exceeds the weekly static threshold limit.

#### Step # Description

- SE\_01 In the early morning, the daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	100
Special Event:	None

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	250
Monthly Accumulator:	850

- SE\_03 The store places an order for a quantity of 100 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 100	True
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(100 + 250) <= 300	False
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(100 + 850) <= 1200	True
Is order quantity <= dynamic threshold limit?	100 <= 100	True
Is there a special event?		No

SE\_05 The order is flagged as an order or interest.

#### 4.2.4 Process Scenario: Order Qty Exceeds Monthly Static Threshold Limit

The following threshold control process scenario demonstrates an order quantity that exceeds the monthly static threshold limit.

#### Step # Description

- SE\_01 In the early morning, daily data extracts are received and processed. The system;
  - calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description

Daily Static Threshold: 500

Weekly Static Threshold: 2000

Monthly Static Threshold: 5000

Dynamic Threshold: 500

Special Event: None

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	900
Monthly Accumulator:	4700

- SE\_03 The store places an order for a quantity of 500 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	500 <= 500	True
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(500 + 900) <= 2000	True
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(500 + 4700) <= 5000	False
Is order quantity <= dynamic threshold limit?	500 <= 500	True
Is there a special event?		No

SE\_05 The order is flagged as an order or interest.

#### 4.2.5 Process Scenario: Package Size Change and Order Qty that does not Exceed Thresholds

The following threshold control process scenario demonstrates a preferred product package size change and a subsequent order qty that does not exceed the static or dynamic threshold limits.

#### Step # Description

- SE\_01 On day 1, in the early morning, the daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	800
Weekly Static Threshold:	2400
Monthly Static Threshold:	10000
Dynamic Threshold:	800
Special Event:	None

The weekly and monthly accumulators for the drug are:

Accumulator Description	ո Value
Weekly Accumulator:	500
Monthly Accumulator:	1100

- SE\_03 The store places an order for a quantity of 100 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 800	True
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(100 + 500) <= 2400	True
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(100 +1100) <= 10000	True
Is order quantity <= dynamic threshold limit?	100 <= 800	True
Is there a special event?		No

- SE\_05 The order is not considered an order of interest.
- SE\_06 Publix changes the preferred NDC at the warehouse from a package size of 100 to 1000.
- SE\_07 On day 2, in the early morning, the daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_08 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	1000

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	600
Monthly Accumulator:	1200



#### Step # Description

Weekly Static Threshold:	2400
Monthly Static Threshold:	10000
Dynamic Threshold:	1000
Special Event:	None

Notice that the static and dynamic thresholds were changed to reflect the new package size.

Threshold Description	Old Value	New Value
Daily Static Threshold:	800	1000
Dynamic Threshold:	800	1000

- SE\_09 The store places an order for a quantity of 1000 units of the drug.
- SE\_10 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	1000 <= 1000	True
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(1000 + 600) <= 2400	True
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(1000 + 1200) <= 10000	True
Is order quantity <= dynamic threshold limit?	1000 <= 1000	True
Is there a special event?		No

SE\_11 The order is not considered an order of interest.

#### 4.2.6 Process Scenario: Package Size Change and Order Qty Exceeds Thresholds

The following threshold control process scenario demonstrates a preferred product package size change and a subsequent order qty that exceeds the static or dynamic threshold limits.

#### Step # Description

- SE\_01 On day 1, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

The weekly and monthly accumulators for the drug are:

Threshold Description Value
Daily Static Threshold: 900
Weekly Static Threshold: 3000
Monthly Static Threshold: 12000
Dynamic Threshold: 900
Special Event: None

- Accumulator Description Value
  Weekly Accumulator: 500
  Monthly Accumulator: 1100
- SE\_03 The store places an order for a quantity of 100 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 900	True
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(100 + 500) <= 3000	True
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(100 +1100) <= 12000	True
Is order quantity <= dynamic threshold limit?	100 <= 900	True
Is there a special event?		No

- SE 05 The order is not considered an order of interest.
- SE\_06 Publix changes the preferred NDC at the warehouse from a package size of 100 to 1000.
- SE\_07 On day 2, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_08 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

The weekly and monthly accumulators for the drug are:

Threshold Description Value
Daily Static Threshold: 1000

Accumulator DescriptionValueWeekly Accumulator:600Monthly Accumulator:1200



#### Step # Description

Weekly Static Threshold: 3000
Monthly Static Threshold: 12000
Dynamic Threshold: 1000
Special Event: None

Notice that the static and dynamic thresholds were changed to reflect the new package size.

Threshold Description	Old Value	New Value
Daily Static Threshold:	900	1000
Dynamic Threshold:	900	1000

- SE\_09 The store places an order quantity of 2000 units of the drug.
- SE\_10 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	2000 <= 1000	False
Is order quantity plus current weekly accumulator quantity <=	(2000 + 600) <= 3000	True
weekly static threshold limit?		
Is order quantity plus current monthly accumulator quantity	(2000 + 1200) <= 12000	True
<= monthly static threshold limit?		
Is order quantity <= dynamic threshold limit?	2000 <= 1000	False
Is there a special event?		No

SE\_11 The order is flagged as an order or interest.

#### 4.2.7 Process Scenario: Order Qty Exceeds Dynamic Threshold limit

The following threshold control process scenario demonstrates an order qty that exceeds the dynamic threshold limit.

#### Step # Description

- SE\_01 On day 1, in the early morning, daily data extracts are received and processed. The system;
  - calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	100
Special Event:	None

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	0
Monthly Accumulator:	0

- SE\_03 The store places an order for a quantity of 100 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 100	True
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(100 + 0) <= 300	True
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(100 + 0) <= 1200	True
Is order quantity <= dynamic threshold limit?	100 <= 100	True
Is there a special event?		No

- SE\_05 The order is not considered an order of interest.
- SE\_06 On day 2, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.



#### Step # Description

SE\_07 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	50
Special Event:	None

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	100
Monthly Accumulator:	100

Notice that the dynamic threshold was changed

Threshold Description	Old Value	New Value
Dynamic Threshold:	100	50

- SE\_08 The store places an order quantity of 100 units of the drug.
- SE\_09 The Threshold Control compares the order quantity to the static and dynamic values.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 100	True
Is order quantity plus current weekly accumulator quantity <=	(100 + 100) <= 300	True
weekly static threshold limit?		
Is order quantity plus current monthly accumulator quantity <=	(100 + 100) <= 1200	True
monthly static threshold limit?		
Is order quantity <= dynamic threshold limit?	100 <= 50	false
Is there a special event?		No

SE\_10 The order is flagged as an order or interest.

#### 4.2.8 Process Scenario: Generic Launch Special Event

The following threshold control process scenario demonstrates a generic launch special event.

#### Step # Description

- SE\_01 In the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.

The system finds a 'Generic Launch' special event.

SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	300
Special Event:	Generic Launch

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	100
Monthly Accumulator:	100

- SE\_03 The store places an order for a quantity of 300 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	300 <= 100	False
Is order quantity plus current weekly accumulator quantity <=	(300 + 100) <= 300	False
weekly static threshold limit?		
Is order quantity plus current monthly accumulator quantity <=	(300 + 100) <= 1200	True
monthly static threshold limit?		
Is order quantity <= dynamic threshold limit?	300 <= 300	True
Is there a special event?	Generic Launch	Yes

SE\_05 The special event 'generic launch' overrides the static threshold. The order is not considered an order of interest.

#### 4.2.9 Process Scenario: Back Order Special Event

The following threshold control process scenario demonstrates a back order special event.

#### Step # Description

- SE\_01 On day 1, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_01 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	100
Special Event:	None

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	100
Monthly Accumulator:	100

- SE\_02 The store places an order for a quantity of 100 units of the drug.
- SE\_03 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 100	True
Is order quantity plus current weekly accumulator quantity <=	(100 + 100) <= 300	True
weekly static threshold limit?		
Is order quantity plus current monthly accumulator quantity <=	(100 + 100) <= 1200	True
monthly static threshold limit?		
Is order quantity <= dynamic threshold limit?	100 <= 300	True
Is there a special event?		No

- SE\_04 The order is not considered an order of interest.
- SE\_05 The EDI 855 and/or 856 transaction is received and indicates zero quantity of the drug will be shipped (e.g. the item is backordered).

Number of consecutive back order days = 1

Test Description	n	Test	Result
Is number of ba	ack order days <= configured value	1 <= 3	True

The special event 'back order' is not set.

- SE\_01 On day 2, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.

#### Step # Description

SE\_06 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	300
Special Event:	No

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	100
Monthly Accumulator:	100

- SE\_07 The store places an order for a quantity of 100 units of the drug.
- SE\_08 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 100	True
Is order quantity plus current weekly accumulator quantity <=	(100 + 100) <= 300	True
weekly static threshold limit?		
Is order quantity plus current monthly accumulator quantity <=	(100 + 100) <= 1200	True
monthly static threshold limit?		
Is order quantity <= dynamic threshold limit?	100 <= 300	True
Is there a special event?		No

- SE\_09 The order is not considered an order of interest.
- SE\_10 The EDI 855 and/or 856 transaction is received and indicates zero quantity of the drug will be shipped (e.g. the item is backordered).

Number of consecutive back order days = 2

Test Description	Test	Result
Is number of back order days <= configured value	2 <= 3	True

The special event 'back order' is not set.

- SE\_01 On day 3, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_11 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	300
Special Event:	No

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	100
Monthly Accumulator:	100

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#### Step # Description

- SE\_12 The store places an order for a quantity of 100 units of the drug.
- SE\_13 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	100 <= 100	True
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(100 + 100) <= 300	True
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(100 + 100) <= 1200	True
Is order quantity <= dynamic threshold limit?	100 <= 300	True
Is there a special event?		No

- SE\_14 The order is not considered an order of interest.
- SE\_15 The EDI 855 and/or 856 transaction is received and indicates zero quantity of the drug will be shipped (e.g. the item is backordered).

Number of consecutive back order days = 3

Test Description	Test	Result
Is number of back order days <= configured value	3 <= 3	False

The special event 'back order' is set.

- SE\_01 On day 4, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.
- SE\_16 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	300
Special Event:	Back Order

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	100
Monthly Accumulator:	100

SE\_17 The store places an order for a quantity of 200 units of the drug.



#### Step # Description

SE\_18 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	200 <= 100	False
Is order quantity plus current weekly accumulator quantity <=	(200 + 100) <= 300	True
weekly static threshold limit?		
Is order quantity plus current monthly accumulator quantity <=	(200 + 100) <= 1200	True
monthly static threshold limit?		
Is order quantity <= dynamic threshold limit?	200 <= 300	True
Is there a special event?	Back Order	Yes

SE\_19 The special event 'back order' overrides static threshold. The order is not considered an order of interest.

#### 4.2.10 Process Scenario: Store Acquisition Special Event

The following threshold control process scenario demonstrates a store acquisition special event.

#### Step # Description

- SE\_01 On day 1, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.

The system finds a 'Store Acquisition' special event.

SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	300
Special Event:	Store Acquisition

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	100
Monthly Accumulator:	100

- SE\_03 The store places an order for a quantity of 200 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	200 <= 100	False
Is order quantity plus current weekly accumulator quantity <= weekly static threshold limit?	(200 + 100) <= 300	True
Is order quantity plus current monthly accumulator quantity <= monthly static threshold limit?	(200 + 100) <= 1200	True
Is order quantity <= dynamic threshold limit?	200 <= 300	True
Is there a special event?	Store Acquisition	Yes

SE\_05 The special event 'store acquisition' overrides static threshold. The order is not considered an order of interest.

#### 4.2.11 Process Scenario: Product Recall Special Event

The following threshold control process scenario demonstrates a product recall special event.

#### Step # Description

- SE\_01 Every day, in the early morning, daily data extracts are received and processed. The system;
  - a) calculates store-level drug inventory minimum order quantities and maximum order quantities;
  - b) determines data specific special events; and
  - c) calculates dynamic thresholds.

The system finds a negative balance on-hand adjustment of 100 units that was a result of a product recall. The 'Product Recall' special event is set.

SE\_02 Before any orders are placed, the static and dynamic threshold limits for a drug at a specific store are:

Threshold Description	Value
Daily Static Threshold:	100
Weekly Static Threshold:	300
Monthly Static Threshold:	1200
Dynamic Threshold:	200
Special Event:	Product Recall

The weekly and monthly accumulators for the drug are:

Accumulator Description	Value
Weekly Accumulator:	100
Monthly Accumulator:	100

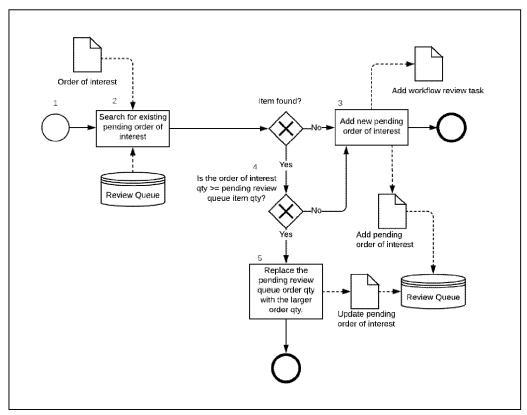
- SE\_03 The store places an order for a quantity of 200 units of the drug.
- SE\_04 The Threshold Control system component compares the order quantity to the static and dynamic threshold limits.

Test Description	Test	Result
Is order quantity <= daily static threshold limit?	200 <= 100	False
Is order quantity plus current weekly accumulator quantity <=	(200 + 100) <= 300	True
weekly static threshold limit?		
Is order quantity plus current monthly accumulator quantity <=	(200 + 100) <= 1200	True
monthly static threshold limit?		
Is order quantity <= dynamic threshold limit?	200 <= 300	True
Is there a special event?	Product Recall	Yes

SE\_05 The special event 'product recall' overrides the static threshold. The order is not considered an order of interest.

#### 4.3 REPETITIVE ORDER VALIDATOR PROCESS

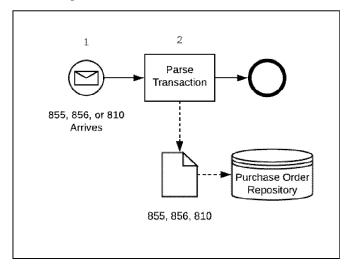
The Repetitive Order Validator determines whether an order of interest is a duplicate item pending review.



Step#	Description
1.	The Threshold Control identified an order or interest.
2.	The system determines whether an existing pending order of interest that matches the same store and item.
3.	If the system does not find an existing pending order of interest that matches the same store and item, a new pending order of interest is added to the review queue and a workflow review task is created.
4.	If the system finds an existing pending order of interest that matches the same store and item and the order of interest quantity is less than the existing pending order of interest quantity, a new pending order of interest is added to the review queue and a workflow review task is created.
5.	If the system finds an existing pending order of interest that matches the same store and item and the order of interest quantity is greater or equal to the existing pending order of interest quantity, the quantity is replaced with the larger order quantity.

### 4.4 OI Buy 855, 856, and 810 Process Diagram

The following diagram describes the receipt of EDI 855 Purchase Order Acknowledgement, EDI 856 Shipment Acknowledgement, and EDI 810 Invoices.

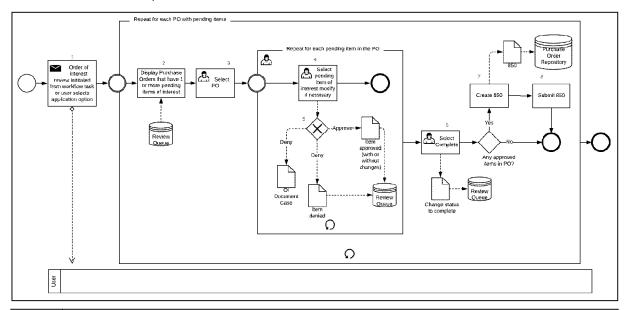


Step#	Description
1.	OrderInsite receives an EDI 855 Purchase Order Acknowledgement, EDI 856 Shipment Acknowledgement, or EDI 810 Invoice.
2.	The system parses the transaction and stores the information in the Purchase Order Repository.

## **REVIEW QUEUE**

The Review Queue displays items flagged as Orders of Interest so that a course of action regarding the item can be determined by a user (e.g. it contains a repository of unworked orders of interest).

#### 5.2 USER REVIEW QUEUE PROCESS DIAGRAM



Step#	Description
1.	The user selects an Order of Interest workflow task or selects the Review Queue option.
2.	A screen displays the Review Queue which is a list of purchase orders that have 1 or more items flagged as an order or interest.
3.	The user selects a purchase order and the items flagged as an order of interest are displayed.
4.	For each item flagged as an order of interest the user with appropriate permissions;  a) approves the item with the originally specified quantity;  b) approves the item with an adjusted quantity; or  c) denies the item.
5.	If the item is approved, the item is included in a new 850 Purchase Order with the original or modified quantity and the status of the pending order of interest is updated to approved.  If the item is denied, a case is created in OrderInsite's case management application "OI Document" and the status of the pending order of interest is updated to denied.
6.	After all the order of interest items in a purchase order have been approved or denied, the user completes the purchase order review.
7.	If at least 1 item in the purchase order was approved, an 850 is created and saved.

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Step#	Description
	If at least 1 item in the order is approved, the user submits the order for fulfillment. The system will create a new EDI 850 Purchase Order.
	Only 1 new 850 is created for each originally submitted 850.
	The PO number of the new 850 will be the original PO number followed by the characters SOM. For example, if the original PO number was 398293, the PO number of the new 850 would be '398293SOM'.
8.	The new 850 Purchase Order is submitted to the Publix Switch.

#### **ANALYTICS**

OrderInsite's Power BI tool will be used to provide controlled substance prescription data analytics to identify suspicious patterns. The analytic results can be used as a reference to decide whether to adjust the static and dynamic thresholds.

Possible metrics are listed below but Publix can decide whether all these would be relevant to their business purpose.

- 1. Script ratio pattern changes
- 2. Script ratio among region and Chain
- 3. Cash payment ratio pattern changes
- 4. Cash payment ratio among region and Chain
- 5. Prescriber script ratio pattern changes
- 6. Prescriber patient ratio pattern changes
- 7. Prescriber cash patient ratio pattern changes
- 8. Prescriber cash patient ratio among region and Chain
- 9. Patient with early fill/refill
- 10. Patient receiving same drug from
  - 10.1 Multiple scripts
  - 10.2 Multiple prescribers
  - 10.3 Multiple stores
- 11. Unusual unassociated orders
- 12. Order quantity and usage diversion
- 1.3 Stores comparison

Workflow to allow Publix to adjust the threshold by drug family, store, or chain globally.

Publix to adjust the total quantity and recalculate the static threshold.

System to selectively remove (mark off) suspicious transactions, which would impact the dynamic threshold.

#### 6.1.1 Example of a Static Threshold Adjust

After reviewing analysis results, a user decides to adjust the static threshold down by 5% for a drug with a package size of 100 at a specific store.



	Before Adjustment	After Adjustment
Daily Static Threshold:	800	760
Daily Maximum Quantity:	8 Bottles(800)	8 Bottles (760)
Weekly Static Threshold:	2400	2280
Current Weekly Accumulator:	500	500
Weekly Maximum Quantity:	24 Bottles (2400)	23 Bottles (2280)
Monthly Static Threshold:	10000	9500
Current Monthly Accumulator:	1100	1100
Monthly Maximum Quantity:	100 Bottles (10000)	95 Bottles (9500)
Dynamic Threshold:	800	800
Special Event:	None	None

#### 6.1.2 Example of a Dynamic Threshold Adjust by Excluding a Prescriber

After reviewing analysis results, a user decides to exclude prescription-transactions for a specific prescriber because they appear to be suspicious and they want to reduce the dynamic thresholds for any drug prescribed by the prescriber and filled at any store. The following table shows the results for a specific drug with a package size of 100. Before the adjustment if the store orders of 100 will would not trigger an order of interest, whereas after the adjustment the order of 100 would trigger an order of interest.

	Before Adjustment	After Adjustment
Daily Static Threshold:	100	100
Weekly Static Threshold:	300	300
Current Weekly Accumulator:	0	100
Monthly Static Threshold:	1200	1200
Current Monthly Accumulator:	0	100
Dynamic Threshold:	100	50
Special Event:	None	None

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**REPORTS** 

Not complete

(i) orderinsite	Design	Specification
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## **NOTIFICATION ENGINE**

Not complete

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## **OI DOCUMENT**

Not compete



### **APPENDIX**

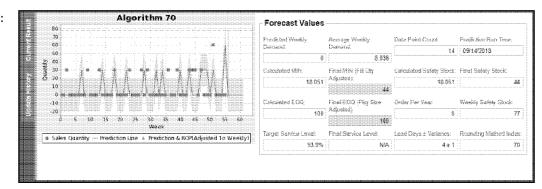
#### 10.1 REFERENCES

#### 10.1.1 Forecasting Algorithms

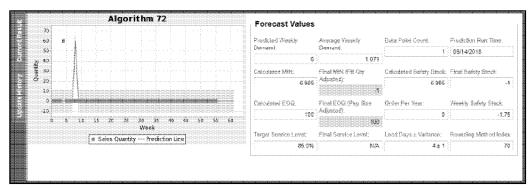
Refill-based forecasting algorithms are defined by the numbers 70 and 72. They are used to predict refill dates and quantities for dispensing patterns demonstrate a consistent refill schedule. Drugs that fit this model are systematically updated with a Minimum Quantity 5 to 10 days prior to the next scheduled refill date (i.e. Scheduled Refill Buffer) so that it is ordered by the Pharmacy Practice Management System. After the drug is ordered, the system updates the Minimum Quantity to a minimum value until the drug is needed again for another refill.

Below are examples of graphs and forecast values screens for Algorithm 70 and 72:

Algorithm 70:



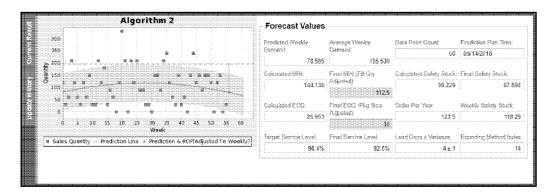
Algorithm 72:



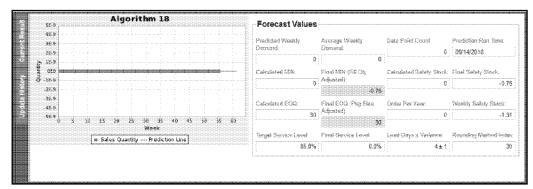
Non-refill-based forecasting algorithms are defined by the numbers 2 and 18. They are used to predict future demand if the dispensing pattern isn't a consistent sparse pattern. These algorithms analyze the historical dispensing pattern and apply various proprietary forecasting models to produce the most accurate forecast result. The system assigns a Service Level Score based on the dynamic multi-dimension analysis of the number of prescriptions filled, prescription acquisition cost, and prescription price to determine the "ABC Inventory Group" the drug falls in. The Service Level Score is used in conjunction with a client-level configured Lead Time and Lead Time Variance to determine the Safety Stock Level. The Safety Stock Level is added to the calculated forecast quantity to determine the Final Reorder Point.

Below are examples of graphs and forecast values screens for Algorithm 2 and 18:

Algorithm 2:



Algorithm 18:



Predicted Weekly Demand: The system calculated quantity predicted to meet the current week demand.

Average Weekly Demand: The system calculated average weekly demand.

Data Point Count: The number of discrete prescriptions included in the analysis. Statistically

irrelevant datum points are excluded.

Prediction Run Time: The date the forecast predictions were calculated.

Calculated MIN: The prediction analysis calculated minimum quantity, the MIN is equal to the

expected demand during the lead time plus the safety stock.

Final MIN (Fill Qty Adjusted): The calculated minimum quantity adjusted to account for the normal prescription

fill quantity.

Calculated Safety Stock: The calculated safety stock needed to meet the service level requirement.

Final Safety Stock: The calculated safety stock adjusted to account for the products package size.

Calculated EOQ: The calculated Economic Order Quantity (EOQ) considering inventory capital costs

and the product cost. The objective is to decide the order quantity to minimize the

total annual cost, including holding and setup costs.

Final EOQ (Pkg Size Adjusted): The calculated Economic Order Quantity adjusted to account for products package

size.

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Order Per Year: The number of times the product is ordered per year.

Weekly Safety Stock: The excess quantity to keep in stock to meet a week's demand in excess of

expected demand due to variable demand rate and/or variable lead time.

Target Service Level: The service level percentage that is targeted to achieve either the calculated

forecasted MIN/MAX. The service level is the probability that the demand will not exceed supply during the lead time. The risk of a stock outage is 1 minus the

Service Level.

Final Service Level: The service level percentage achieved after the Final MIN is adjusted to account for

product package size. The service level is the probability that the demand will not

exceed supply during the lead time.

Lead Days ± Variance: The first part of the field is the Lead Time, which is the number of days that it takes

a supplier to deliver the drug once an order is placed. The second part of the field

is the positive/negative (±) Lead Time Variance.

Rounding Method Index: Indicates the algorithm used to round the reorder point or minimum quantity to

meet the needed dispensing quantity.

#### 10.2 TERMINOLOGY

<u>Term</u> <u>Description</u>

#### 10.3 REVISION HISTORY

Date Author Description of Change

04/29/2019 Clark Kucharski Original